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Quarterly Report – Public Page

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Contract Number: DTPH56-07-T-000006

Prepared for: United States Department of Transportation
Pipeline and Hazardous Materials Safety Administration
Office of Pipeline Safety

Project Title: “Validation of Assessment Methods for Production Scale Girth
Welding of High Strength Pipelines with Multiple Pipe Sources,
#275”

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Project Summary

This project addresses gaps in the understanding of girth welding of X100 grade high strength steel pipelines. The objectives of the project are:

1. Test a large set of girth welds produced under realistic conditions by a state of the art high productivity GMAW system;
2. Demonstrate the effect of material variability between pipes, between heats and between pipe manufacturers; and
3. Validate current and proposed new weld defect assessment methods against the performance of a large set of welds made under field production conditions.

The project will test girth welds made during the construction of the BP X100 Operational Trial to determine their properties and defect tolerance. The activities will include: a) Review of construction records and selection of welds for examination; b) Test program design; c) Weld testing and examination; d) Evaluation of defect tolerance of welds using fitness for purpose assessment criteria; and e) Reporting and dissemination of results.

Technical Status

The pipeline sections (Section A is 600m, Section B is 200m) have been excavated and cut based upon a cutting plan that was agreed by the Project Team. A preliminary visual inspection has been undertaken of the condition of the field joint and mainline coatings and preliminary adhesion studies have also been undertaken (Section B is complete, Section A is scheduled for completion early October 2009).

A meeting was held between GL and University of Gent at GL's Spadeadam test facility to review the available welds and confirm which welds should be considered further for wide plate testing. Due to the level of overmatch, additional welds have been identified as potential candidates for the test program. A series of small-scale tests will be undertaken before the final selection can be made on the ten preferred girth welds. The small-scale testing will be completed by the end of the next quarter. Curved wide plate testing of the 10 most suitable girth welds will commence in early 2010.

The team completed the mechanical test plan which will comprise the following: Curved wide plate tests, standard fracture mechanics tests, Charpy impact tests, tensile tests and macro-sections. These tests will be undertaken on each of the ten girth welds selected.

Plans for Future Activity

Over the next quarterly reporting period, the coating studies will have been completed and the ten most suitable girth welds for curved wide plate testing will be confirmed from the small scale tests that are planned for this next quarter. The project team will be advised of progress via monthly progress reports.